



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,692	06/23/2006	Henrik Sjoland	0110-058	9598
42015 7590 03/24/2008 POTOMAC PATENT GROUP PLLC P. O. BOX 270 FREDERICKSBURG, VA 22404				
EXAMINER				
HU, RUI MENG				
ART UNIT		PAPER NUMBER		
2618				
NOTIFICATION DATE		DELIVERY MODE		
03/24/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com

### Office Action Summary

**Application No.**

10/549,692

**Applicant(s)**

SJOLAND ET AL.

**Examiner**

RuiMeng Hu

**Art Unit**

2618

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2 and 4-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

### *Response to Amendment*

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 4** recites the limitation "**the filter**" in line 1. There is insufficient antecedent basis for this limitation in the claim.

#### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by **Aoyama et al. (US Patent 5517685)**.

Consider **claim 1**, Aoyama et al. disclose a passive mixer (figure 4, column 16 lines 12-25, mixer 48, the PLL circuit can be constituted by only the passive devices) for converting a first signal having a first frequency (figure 4, RF signal) to a second signal having a second frequency (figure 4, IF signal), comprising:

mixing means (mixer 48), a first terminal, a second terminal and a third terminal, for providing the second signal (IF signal) by mixing a third signal (LO signal) having a third frequency (LO signal) provided as input at said second terminal and the first signal (RF signal) provided as input at either the first or the third terminal; and a feedback circuit (figure 4, LPF 49) operatively connected to said third and said second terminal (figure 4), wherein the feedback circuit comprises a low pass filter (LPF 49).

6. **Claims 1, 2, 5-7 and 9** are rejected under 35 U.S.C. 102(b) as being anticipated by **Hoover (US Patent 4090139)**.

Consider **claim 1**, Hoover discloses a passive mixer (FET mixer circuits, column 1 line 43-column 3 line 28) for converting a first signal having a first frequency (figure 1, E\_IN2 which may be at a modulating frequency  $f_2$  is applied to the primary winding 14 of a transformer 16) to a second signal having a second frequency (The parallel resonant circuit 66 is tuned to one of the side-band frequencies  $f_2 + f_1$  or  $f_2 - f_1$  and an output signal at this frequency is available at the terminals of winding 68 which is coupled to coil 62), comprising: mixing means (the first and second COS/MOS pairs), a first terminal, a second terminal and a third terminal (figure 1), for providing the second signal by mixing a third signal (figure 1, E\_IN1 which may be at a carrier frequency  $f_1$ ) having a third frequency provided as input at said second terminal and the first signal (the modulating signal) provided as input at either the first or the third terminal; and a feedback circuit (figure 1, feedback

circuit comprising capacitor 69 and resistor 72) operatively connected to said third and said second terminal (figure 1, E\_OUT terminal and E\_IN1 terminal), wherein the feedback circuit comprises a low pass filter (claim 15, figure 1, the low pass filter comprising capacitor 69 and resistor 72).

Consider **claim 2 as applied to claim 1**, Hoover discloses wherein the feedback circuit is a bootstrap circuit (figure 1, the low pass filter comprising capacitor 69 and resistor 72).

Consider **claim 5 as applied to claim 1**, Hoover discloses wherein said mixing means is a voltage controlled switch (the FET mixer circuit has voltage controlled switch characteristics).

Consider **claim 6 as applied to claim 1**, Hoover discloses wherein said mixing means comprises a FET transistor switch (figure 1, FET mixer) having either its drain or source operatively connected to said first terminal (figure 1), its gate operatively connected to said second terminal (figure 1, carrier signal port connected to the gates of the first COS/MOS pair), and either its source or drain operatively connected to said third terminal (figure 1, E\_OUT terminal).

Consider **claim 7 as applied to claim 6**, Hoover discloses characterized in that said FET transistor is an NMOS transistor (figure 1, N1, NMOS transistor).

Consider **claim 9 as applied to claim 1**, Hoover discloses wherein the mixer is included in electronic equipment (the disclosed FET mixer circuits used for converting a frequency signal together with a common-gate

Art Unit: 2618

amplifier, such mixer can be used in a variety of electronic equipments).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoover (US Patent 4090139)** in view of **Geddes et al. (US Patent 5263198)**.

Consider **claim 4 as applied to claim 1**, Hoover discloses wherein the filter comprises a capacitor connected between said second terminal and said mixing means (the teaching of a filter comprises a capacitor as to filter a LO signal is well known in the art, see Geddes et al. (US Patent 5263198) figure 2 capacitor 80, therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to include a capacitor to block DC signals), and a resistor (Hoover, resistor 72) connected between said third terminal and the connection between said capacitor and said mixing means (the capacitor 80 filters the carrier signal before the carrier signal being inputted to the mixing means, see figure 2 of Geddes et al).

11. **Claims 8, 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoover (US Patent 4090139)**.

Consider **claim 8 as applied to claim 1**, Hoover fails to disclose wherein the mixer is a balanced mixer comprising an even number of mixing means.

However, the teaching of double balanced mixer is well known in the art.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of

Hoover as to modify the mixer circuit in figure 1 into a double balanced mixer as a second embodiment.

Consider **claim 10 as applied to claim 9**, Hoover fails to disclose wherein the electronic equipment is a portable communication equipment having a supply voltage of less than 2V.

However, the teaching of a portable communication device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in a portable communication device having a supply voltage of less than 2V.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a portable communication device having a supply voltage of less than 2V.

Consider **claim 11 as applied to claim 9**, Hoover fails to disclose wherein the electronic equipment is a mobile radio terminal, a mobile telephone, a pager, or a communicator.

However, the teaching of a mobile communication device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in a mobile communication device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a mobile communication device.



Consider **claim 12 as applied to claim 9**, Hoover fails to disclose wherein the electronic equipment is adapted to operate in a wireless local area network.

However, the teaching of a wireless mobile communication device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in a wireless mobile communication device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a wireless mobile communication device.

Consider **claim 13 as applied to claim 9**, Hoover fails to disclose wherein the electronic equipment is communication equipment adapted to provide short-range supplementary communication according to Bluetooth.RTM. technology.

However, the teaching of a Bluetooth device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in such device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a Bluetooth device.

### ***Conclusion***

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed**

**to:** Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Art Unit: 2618

**Hand-delivered responses** should be brought to

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RuiMeng Hu whose telephone number is 571-270-1105. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*RuiMeng Hu*  
R.H./rh  
March 11, 2008

/Edward Urban/

Supervisory Patent Examiner, Art Unit 2618